thereof.

24. The method according to claim 23, wherein said method is a method of producing a biopolymer array.

25. A biopolymeric array produced according to the method of claim 24.

26. (Amended) A method of detecting the presence of an analyte in a sample, said method comprising:

contacting (i) a biopolymeric array according to Claim 25 having a polymeric ligand that specifically binds to said analyte, with (ii) a sample suspected of comprising said analyte under conditions sufficient for binding of said analyte to a biopolymeric ligand on said array to occur; and

detecting the presence of binding complexes on the surface of the said array to detect the presence of said analyte in said sample.

27. The method according to claim 26, wherein said method further comprises a data transmission step.

28. A method according to claim 27 wherein the data is communicated to a remote location.

29. A method comprising receiving data representing a result of a reading obtained by the method of claim 27.

Formal Matters

Attached hereto is a marked-up version of the changes made to the Specification and Claims by the current amendment. No new matter has been added. The attached is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE.**" As Referenced above, copies of Figures 1 and 2 are also attached.

Applicants respectfully request reconsideration of the application in view of the amendments and remarks made herein.

Rejections under 35 USC §112, ¶2

Claims 1 and 6 have been amended to handle the issues with antecedent bases noted by the Examiner. The Examiner's attention to detail in this regard is much appreciated.

In response to the Examiner's queries regarding the fluid source in claims 1 and 2, and pressure compensation source in claims 1 and 4 Applicants note the following:

1) In claim 1, a subcombination configured to be connected to a fluid source is claimed; while in claim 2, the combination of the system of claim 1 and the fluid source itself is required.

2) In claim 1, the manometer and lines of the subcombination are configured so that a fluid source connected thereto may also be connected to a pressure compensation source; while in claim 4, the combination of the system of claim 1 and the pressure compensation source itself is required.

Generaly, claims 1 is related to claims 2 and 4 in terms of subcombination and combination(s).

With respect to claims 14, 17 and 18, the Examiner has questioned whither the fluid supply (vessel) in claim 17 is different from the fluid supply vessel in claim 18. It is not intended to be. Claim 18 has been amended to clarify this by referring to "said" fluid supply vessel.

In view of the foregoing, it is believed that each consideration under 35 USC §112 ¶2 has been resolved. Accordingly withdrawal of these rejections is requested.

Rejections under 35 USC §102 of claims 1-6, 10, 13-19, 21 and 22 over Hoen et al.

In rejecting the claims above, the Examiner characterized the Hoen system as including:

a manometer (29, 31 and 33);
a fluid source (13);
a pressure compensation source (13);
a fluid reservoir (15);
a pulsejet printhead – the printhead of (15);
a first valve (21) at an exit of the "manometer";
a second valve (21) at an entrance to said fluid reservoir;
lines (ink paths, Figs. 1,2); and
print medium (ink).

Further, the Hoen system is characterized as being "adapted to vary an output of said pressure compensation source to maintain a fluid level with said manometer in a predetermined range to maintain fluid pressure at said nozzle within a corresponding range." Applicants disagree with many aspects of such a characterization of the Hoen system.

First, as stated in the "Physics Dictionary" found at http://physics.about.com, a manometer is, "a device for measuring pressure differences, usually by the difference in height of two liquid columns." By "manometer," the context of the present application clearly requires such a liquid-column type manometer. This is similarly clear in view of the requirements of claims 1, 10 and those dependent therefrom, where the monometer described is one which includes a fluid level ("ML" as seen in the figures) that is indicative of pressure.

Second, in Hoen the sensor (29) and any related system adaptation do not respond to a fluid level in the sensor as asserted by the Examiner. Rather, sensor 29 appears to be a common pressure sensor. Hoen discloses a sensor (and system) that is merely responsive to *pressure* of a fluid in communication with the device. In contrast, the invention described in claims 1-13 is responsive to the actual *height or level* of fluid within a tube manometer.

Third, the lines connecting elements in Hoen do not connect the printhead and sensor in parallel. Rather, they are placed in series along a single supply line (17).

Fourth, element (13) of Hoen is not properly characterized as a "pressure compensation source." Hoen does not teach any characteristics of remote reservoir (13) - or any part of the remaining system -that relate to the ability to vary the pressure output of the pressure compensation source. Though claim 1 is believed to have identical scope to that originally presented, the pressure compensation source is now referred to as a "variable pressure" compensation source to highlight the difference between it and what is taught in Hoen.

Finally, Hoen does not disclose two valves. The single valve (21) cannot be treated as two valves to meet the limitations of claims 6.

For the reasons above relating to the characterization of elements of Hoen, the rejections under §102 of claims 1-13, 15-19, 21 and 22 should be withdrawn. Simply put, Hoen does not disclose the claimed invention(s).

The rejections under §102 of claims 14-19, 21 and 22 should be withdrawn as well because the Examiner has not made a full case of anticipation with respect to claim 14. (Claims 15-19, 21 and 22 each include the limitations of claim 14 as well.) Namely, Hoen does not disclose (or fairly suggest) proving an inlet line and an outlet line to and from a reservoir, wherein the inlet line is capped by a valve for connection to a fluid supply. In Hoen, the only reservoir present in element 15 is local reservoir 71. No separate exit "line" is provided therefrom. Rather, as described at column 4, line 64 – column 5, line 8, ink from the reservoir 71 passes through a filter, settles adjacent to a bottom port and is ready for use by the printhead. No intermediate line from the port to a printhead is disclosed.

Further, figures 1 and 2 do not even show an ink path exit from a reservoir portion of element 15. As such, the fluid paths noted by the Examiner are not believed to be pertinent, at least with respect to the outlet line of claim 14.

For the above reasons, the rejections against claims 14-19, 21 and 22 should be withdrawn.[1]

[1] These reasons are believed to be sufficient to gain allowance. However, Applicants reserve the right to further address the rejections made by the Examiner or positions presented by the Examiner that are similar thereto. No acquiescence is intended by silence on any particular point.

Rejections under 35 USC §103 of claims 7, 8, 11 and 20 over Hoen et al. in view of Barinaga et al.

Claim 7 has been amended to distinguish over Hoen in view of Barinaga. Provision of or use of the bellows pump supply apparatus (202) in the latter reference in no way discloses or fairly suggest what is now required of claims 7-9. The claims require a system capable/adapted to be filled by a supply vessel while in use. Such activity is neither disclosed nor fairly suggested in Barinaga. Indeed, the procedure of removal of an ink supply prior to refill is described at column 3, lines 26-44 in the reference.

The inapplicability of Barinaga to claim 20 as amended is further evident in the manner in which the fluid reservoir is configured, since it must be removed in order to be refilled. Claim 20 has also been amended to distinguish over Hoen in view of Barrinaga in a similar manner to the approach taken for claim 7. Namely, it requires feeding print medium under pressure to the reservoir during use of said pulse-jet nozzle.

Accordingly, the rejections against claims 7 – 9 and 20. should be withdrawn.

Further, it is asserted that the teaching of Barinaga are inapplicable to claims 11 and 12. The pressure that is relevant to claims 11, 12 which depend from claim 10 is the pressure used in connection with the fluid reservoir in response to manometer level changes. Instead (as characterized by the Examiner) element (202) – and hence its activity – in Barinaga is equated to the supply vessel. It provides no pressure adjustment in response to deputation from a desired pressure. As such, withdrawal of the rejection as to claims 11 and 12 is respectfully requested.

Rejection under 35 USC §103 of claim 9 and 23-25 over Hoen et al. in view of Barinaga et al. and further in view of Schleifer et al.

For the reason set forth above with respect to claim 7, the rejection as to claim 9 should be withdrawn due to the inapplicability of Barinaga. Still further, the Examiner has provided no motivation for combining the teachings of Shleifer with that of Barinaga and Hoen. Just because pulse-jet printer systems have been used for printing arrays does not mean that one with skill in the art would be motivated to attempt to use the Hoen system as modified by Barinaga to do so. As such, it is believed no *prima facie* case of obviousness has been made with regard to claim. In addition to challenging whether a *prima facie* case has been made, Applicants contend that the rejection as it stands presents an "obvious to try" rationale. Accordingly, withdrawal of the rejection as it stands is respectfully requested.

Rejections under 35 USC §103 of claims 26-29

Claims 26-29 include each of the limitations of claims 18-20, and 23-25 by virtue of their incorporation of the subject matter of those claims. If any of the latter claims are allowable, claims 26-29 should be found to be allowable as well.

Though the merits of the rejection(s) of claims 26-29 are not addressed here except by virtue of addressing claim dependency, no acquiescence is intended regarding the Examiner's characterization of the subject matter of pages 11-14 as "Admitted Prior Art". Yet, Applicants direct the Examiner's attention to the Information Disclosure Statement submitted herewith.

IN CLOSING

Applicant submits that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone the undersigned at the number provided.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-1078, order number 10004452-1.

Respectfully submitted,

Date: 5/31/02

By: _____
Frank P. Becking for Gordon Stewart
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

[0033] The invention is used in producing biochips or arrays/microarrays using print mediums comprising biopolymers or biopolymeric ligands (*e.g.*, proteins, DNA, *etc.*) or precursors thereof, (e.g., activated nucleotide or amino acid residues, etc.) in suspension as a print medium (26). Suitable compositions include those discussed in the references cited above. A system advantageously used in connection with the present invention, especially when produceding such arrays, is described in U.S. Patent Application Serial No. 09/150,504 [(attorney docket number 10010408], titled "Flow Cell Humidity Sensor System,[)]" filed on even date herewith. Further chemical array printing system features advantageously used in connection with the present system are described in the references cited therein, including U.S. Patent Application Serial No. 09/150,504 titled, "Method and Apparatus for Making Nucleic Acid Arrays;" U.S. Patent Application Serial No. 09/300,589 titled, "Method of Performing Array-Based Hybridization Assays Using Thermal Inkjet Deposition of Sample Fluids;" U.S. Patent Application Serial No. 09/846,474 titled "Error Detection In Chemical Array Fabrication"; and U.S. Patent Nos. 6,242,266 and 6,180,351. Other components of array printing systems which may be adapted for use with the present invention include U.S. Patent Nos: 4,877,745; 5,338,688; 5,474,796; 5,449,754; 5,658,802 and 5,700,637.

IN THE CLAIMS

1. (Amended) A printing system comprising:

a pulse-jet printhead including a nozzle, a manometer and lines configured to connect said printhead and manometer in parallel to a fluid source to be connected to a variable pressure compensation source, wherein said system is adapted to vary an output of said variable pressure compensation source to maintain a fluid level within said manometer in a predetermined range to maintain fluid pressure at said nozzle within a corresponding range.

3. (Amended) The system of claim 2, further comprising a sensor to generate a signal in response to the fluid level within said manometer, and a control unit which generates a control signal for said variable pressure compensation source in response to said sensor signal.

4. (Amended) The system of claim 1, further comprising a variable pressure compensation source.

6. (Amended) The system of claim 1, further comprising a second valve at an entrance to [said] a fluid reservoir.

7. (Amended) The system of claim 6, further comprising a supply vessel to feed a print medium to said fluid source, wherein the system is adapted for said feeding to occur during use of said pulse jet nozzle.

16. (Amended) The system of claim 15, further comprising a fluid supply [vessel] reservoir.

18. (Amended) A method of replenishing a pulse-jet reservoir comprising:

providing a system as described in claim 17,

connecting [a] said fluid supply vessel to said reservoir;

opening said valve, and

feeding print medium from said fluid supply vessel to said reservoir.

20. (Amended) The method of claim 19, wherein said print medium is fed under pressure to said reservoir during use of said pulse-jet nozzle.

26. (Amended) A method of detecting the presence of an analyte in a sample, said method comprising:

[(a)] contacting (i) a biopolymeric array according to Claim 25 having a polymeric ligand that specifically binds to said analyte, with (ii) a sample suspected of comprising said analyte under conditions sufficient for binding of said analyte to a biopolymeric ligand on said array to occur; and

detecting the presence of binding complexes on the surface of the said array to detect the presence of said analyte in said sample.

FIG. 1

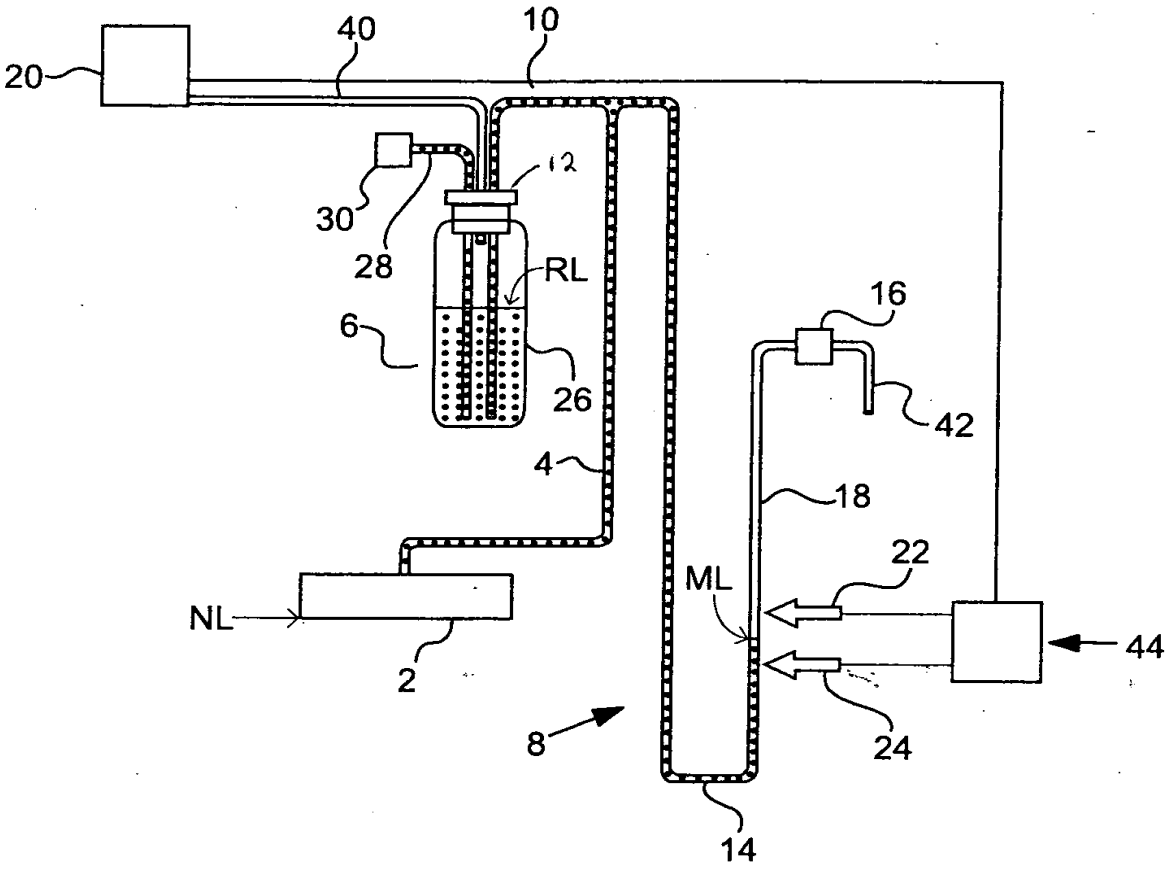

FIG. 2